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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/724,231	11/28/2000	Krishna Balachandran	LUC-280/Balachandran 15-4	6529
32205	7590	01/25/2005	EXAMINER CHANG, EDITH M	
PATTI & BRILL ONE NORTH LASALLE STREET 44TH FLOOR CHICAGO, IL 60602			ART UNIT 2637	PAPER NUMBER

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/724,231

**Applicant(s)**

BALACHANDRAN ET AL.

**Examiner**

Edith M Chang

**Art Unit**

2637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,5-7,11,13 and 17-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5-7,11,13 and 17-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Continued Prosecution Application***

1. Receipt is acknowledged of the "conditional" request for a Continued Prosecution Application (CPA) filed on November 04, 2004 under 37 CFR 1.53(d) based on prior Application No. 09/724,231. Any "conditional" request for a CPA submitted as a separate paper is treated as an unconditional request for a CPA. Accordingly, the request for a CPA application is acceptable and a CPA has been established. An action on the CPA follows.

### ***Response to Arguments***

2. Applicant's arguments, see pages 5-6, filed November 04, 2004, with respect to the rejection(s) of claim(s) 1, 5-7, 11, 13, and 17-19 under USC 103 rejection have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ojard et al.

### ***Claim Objections***

3. Claims 1, 5-7, 11, 13, and 17-19 are objected to because of the following informalities:

Claim 1, line 10: "a receiver" is suggested changing to "the receiver"; line 17: "the first" is suggested changing to "a first"; line 19: "the symbol" is suggested changing to "the mean symbol".

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Claim 13, line 4: "transmit filter" is suggested changing to "a transmit filter"; line 7: "receiver filter" is suggested changing to "a receiver filter"; line 11: "a plurality" is suggested changing to "the plurality".

Claims 5-7, 11, and 17-19 are dependent on the objected claims 1 and 13.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1, 5-7, 11, 13, and 17-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 & 13, line 5: "the transmitted symbols" lacks antecedent basis;

Claims 5-7, 11, and 17-19 are dependent on the rejected claims 1 and 13.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. Claims 1, 5-7, 11, 13 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ngoc et al. (US 6,539,031 B1) in view of Ojard et al. (US 6,760,347 B1).

To claims 1 & 13, in Fig. 1, Ngoc teaches a pair of wireless terminals (transceivers) 100, 100' communicate with each other via the wireless link 102 in a wireless communication system in Fig. 1, the system comprising:

two terminals 100 and 100', and in Fig. 3 it shows each terminal having the TX mod 242, TX upper converter (502 FIG. 14 of the 246 MWM FIG. 3), TX power amplifier (502 FIG. 14 of the 246 MWM FIG. 3), and TX sub-band filter (504 FIG. 14 of the 246 MWM FIG. 3) to form a transmitter and RX sub-band filter (504 FIG. 14 of the 246 MWM FIG. 3), LNA 512, RX down converter (514 RX FIG. 14 of the 246 MWM FIG. 3), and RX demod 244 to form a receiver, to transmit and receive symbols respectively over the wireless link 102 which imparts the inter-symbol interference to the symbols carried over the wireless link (column 18 lines 18-24);

a square-root cosine filter in the transmitter modulator 242 utilized to pulse-shaping the symbols (column 18 lines 1-4) and a matched-filter in the receiver demodulator 244 (column 18 lines 20-24) to perform the pulse-shaping having the matched characteristic to the filter in the TX mod 242 (column 11 lines 20-23);

the receiver section (as decision device), comprising the RX demod 244, the radio framer 228 and, providing the received signal level/RSL to the micro-processor uP 230 to determine the bit error rate (BER).

In FIG. 16, the micro-processor (uP 230) implementing the method of FIG. 20 (column 26 lines 13-17, column 25 lines 57-60) to provide the RATE CHANGE COMMAND to the adaptive counter-measures 616 (column 24 lines 24-31) to select the proper transmitting scheme

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from the QAM, QPSK, and QPSK with spread spectrum when the received signal level (RSL) or the bit error rate (BER) exceeds any thresholds L2, L5, and L6 (column 26 lines 7-12 wherein the < and > are exchangeable). Wherein the FIG.20 (column 25 lines 57-60) determines the received signal level (RSL) and bit error rate (BTR) based on output produced from the RX demod by uP 230.

Ngoc does not explicitly show the structure of the RX demod and all the other essential elements, however, in Figure 7 of '347, Ojard et al. teaches the well known viterbi decoder (708) in the demodulator as the inner coder, the Reed-Solomon decoder (710) as the outer coder to reduce the code errors (column 15 lines 10). It would have been obvious to a one of ordinary skill in the art at the time the invention was made to have the viterbi decoder taught by Ojard in the Ngoc's radio framer (228 Fig.3 '031) before the framing (260 Fig.4 '031), for the purpose to improve the effective bit-error rate of the digital packet (column 15 lines 25-29). The terminal 100 with modified radio framer provides the soft decision metric from the viterbi decoder to the framing (260' FIG.16 '031) then to the uP 230.

**Clams 5-7 & 17-19**, the Ngoc's terminal with modified radio framer teaches deriving the soft decision metric from an output of the RX demod, wherein the viterbi decoder in the receiver section (decision device) provides a log likelihood ration of the maximum likelihood sequence estimation of the decoder/viterbi algorithm (column 15 lines 7-10 '347) to reduce the symbols errors, and the symbols from the constellation mapper (266 Fig.4 '031) comprise binary values (FIG.11 '031).

**Claim 11**, Ngoc teaches selecting the modulation scheme from one of the QAM, QPSK, and QPSK with spread spectrum shown in Fig.18 and stated in column 4 lines 19-37.

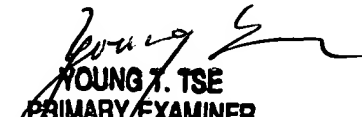
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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M Chang whose telephone number is 571-272-3041. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayanti Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang  
January 19, 2005

  
YOUNG T. TSE  
PRIMARY EXAMINER